EDITORIALS

Continuing Medical Education and Continuing Professional Competence

THESE ARE DAYS of public accountability for medicine. Among other things the public wants to be assured that every physician is competent and remains competent to do whatever he or she is supposed to be doing in patient care. And for a number of reasons continuing medical education is becoming tied to continuing professional competence. The logic in general appears to be that if education made a physician competent in the first place, then continuing education should make for continuing competence. In any case a number of professional societies now demand evidence of continuing education for continued membership and some state governments have established continuing education requirements for the reregistration of a physician's license. However, a direct relationship between any particular continuing education experience and a change in a physician's practice behavior or in practice outcomes has been difficult to demonstrate and the assumption that there is a relationship is actually being questioned. But on the other hand it is obvious enough that physicians do not practice with only the knowledge and skills they used 5, 10 or 20 years ago when they may have completed their initial training. Somehow new knowledge and skills have been acquired, and this by definition is continuing education.

In California a new law (which was supported by the California Medical Association) addresses the problem more specifically. It seeks to link continuing medical education with continuing competence, with physician performance in his or her own practice, and with mechanisms for quality review, and this again with continuing medical education—thus completing a kind of circle of linkages. This is precedent setting. So far there is very limited information and experience with just how these linkages can be established or with how what is or is not accomplished can be measured. But the goal seems to be a reasonable one for both profession and public, and it poses a fascinating educational challenge.

The problem quickly gets down to what is meant by professional competence and how one can determine whether it is or is not present. Competence is hard to define and harder to measure. It certainly is not fixed. Rather it changes with a practice situation or even with a practice problem. A physician may be competent to handle the problem one patient presents but not the problem of the next. A number of things quickly surface as possible or even probable components of physician competence. The most obvious is the need for current scientific or cognitive knowledge. A competent physician must also have up-to-date practice skills. These are of several kinds: technical skills as in surgical or other technical procedures, for example; managerial skills for cases where the services of a variety of health professionals are brought into play; problem-solving skills for both diagnosis and treatment, and communication skills for interacting with patients, their families and others who are properly involved in the care of a patient. And a competent physician should have attitudes of caring and concern and respect for the dignity, the rights and the personal values of the human being who is the patient. Performance and outcome are attributes of competence. It is also likely that a competent physician should not be wasteful of anyone's time or money. There should be cost effectiveness in administering the practice, and a favorable cost benefit for the diagnostic and treatment programs which are advised and carried out. And finally physician competence should produce satisfaction—satisfaction for the patient, for the physician and for society which now pays for so much of health care.

The objectives of continuing medical education to assure this continuing physician competence cannot yet be well defined because physician competence itself is not yet well defined. But it already seems obvious that its dimensions will need to be expanded considerably from what

has been traditional. Ideally, continuing medical education should have the capability to address all the components of competence as these may eventually be identified and defined. Ideally it should result in change in a physician's practice behavior when this is necessary or desirable, and to accomplish this it will be necessary for it to convince physicians that to change will really make a difference in the care or outcome for patients. Obviously if it will make little or no difference there is little or no reason to change—a point which is lost on some behavioral scientists who believe that behavioral change more or less automatically results from programmed information.

And finally, continuing education ideally should encompass more than simply educating a physician about those things commonly seen in his or her particular practice. A hallmark of a truly competent physician is having the knowledge to be aware of, recognize and know what to do about (or what can be done about) problems that are not frequently seen or are even rare. And then there are social and economic developments that increasingly affect patient's rights and patient care with which a competent physician must be familiar. All of this suggests that the objectives and content of continuing medical education will undergo considerable change, reinforcement and refinement as its art and science develop into an increasingly effective instrument to assure the continuing professional competence of physicians in practice. There are many changes ahead in this field and they should be changes for the better.

—MSMW

The Role of Testing in Coronary Artery Disease

EXERCISE stress testing has achieved wide acceptance as a simple, relative inexpensive, noninvasive means of evaluating the physiological consequences of coronary disease—myocardial ischemia. Its safety remains laudably unparalleled by all but the simplest procedures, the combined morbidity and mortality arising from this technique being estimated at under four per 10,000.[1] No test is without its imperfections, however, and it becomes essential for physicians employing any procedure to become fully conversant with its strengths, weaknesses and vagaries. Many of the problems in treadmill exercise testing are brought into focus in the paper by Abbott, Tedeschi and Cheitlin in the current issue of this journal, although it should be stressed in critique that the San Francisco General Hospital house staff does not necessarily reflect the practices of community physicians. The study serves as a valuable springboard for further discussion of exercise testing and its attendant difficulties.

The *sensitivity* of a test is defined as the percent of patients who have disease and in whom there is an abnormal test result. A substantial element of the treadmill test's insensitivity is now well established: in only approximately 65 percent of patients with anatomically significant coronary disease (luminal narrowing in excess of 50 percent of the vessel diameter) will there be a positive response.[2] A common misunderstanding, in the experience of Abbott and colleagues, centers around the fallacious belief that normal findings on a test serve to exclude the presence of coronary disease. Clearly, the 35 percent level of test insensitivity cited above attests to the erroneousness of this notion.

Causes of *false negative tests* include[2-4] (1) performance of inadequate levels of exercise (the concept of graded, maximal exercise has evolved over the years, based on the observation that a 10 to 20 percent increment in positive responders accrues when maximal or near-maximal degrees of activity are achieved); (2) presence of isolated single vessel disease, which is associated with normal test results in 55 to 60 percent of the instances (small areas of ischemia in the myocardium frequently remaining undetected electrocardiographically); (3) presence of coronary disease in the absence of ischemia (because an infarct has occurred distal to the obstructed vessel, because coronary lesions of between 50 and 75 percent may be insufficient to interfere with blood flow or because an area of ventricle is supplied by collateral vessels); (4) failure to monitor the proper lead(s) (utilizing either a unipolar or bipolar lead approximating V5 or V6, or several orthogonal leads, enhances the diagnostic yield by 5 to 15 percent), and finally, (5) simple test fallibility.

The other side of the coin is not covered in such great detail in the current paper: test *specificity* is also imperfect, albeit to a considerably